

COOPERATOR'S MONTHLY COLUMNS

NEW RIVER GORGE

New River Gorge National River staff has planned for the upcoming trapping season in recent months. We have made site maps of and added the Gauley River National Recreation Area and the Bluestone National Scenic River to our program. This has increased the number of low-level populations in our area of responsibility dramatically. We will concentrate on these areas in the coming trapping season.

Several low-level infestations are located in Mercer County, which has been designated as an intensive trapping area. We will work with the State to intensively trap all sites within this county. Other areas that have shown low level activity will be also be monitored closely.

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THE MONONGAHELA NATIONAL FOREST

The MNF concluded formal and informal scoping in February. In addition to radio and newspaper releases, we held open house sessions and public meetings to solicit and identify issues, concerns, and opportunities. We sent over 350 letters to interested individuals, organizations, community officials, and private landowners to inform them of potential intervention activity, planned meetings, and to invite comment.

An interdisciplinary team that included three MNF employees, a WV Department of Natural Resources biologist, a WV Division of Forestry employee, an AIPM entomologist, and a Sierra Club representative, analyzed the issues, formulated the alternatives, and identified those is-

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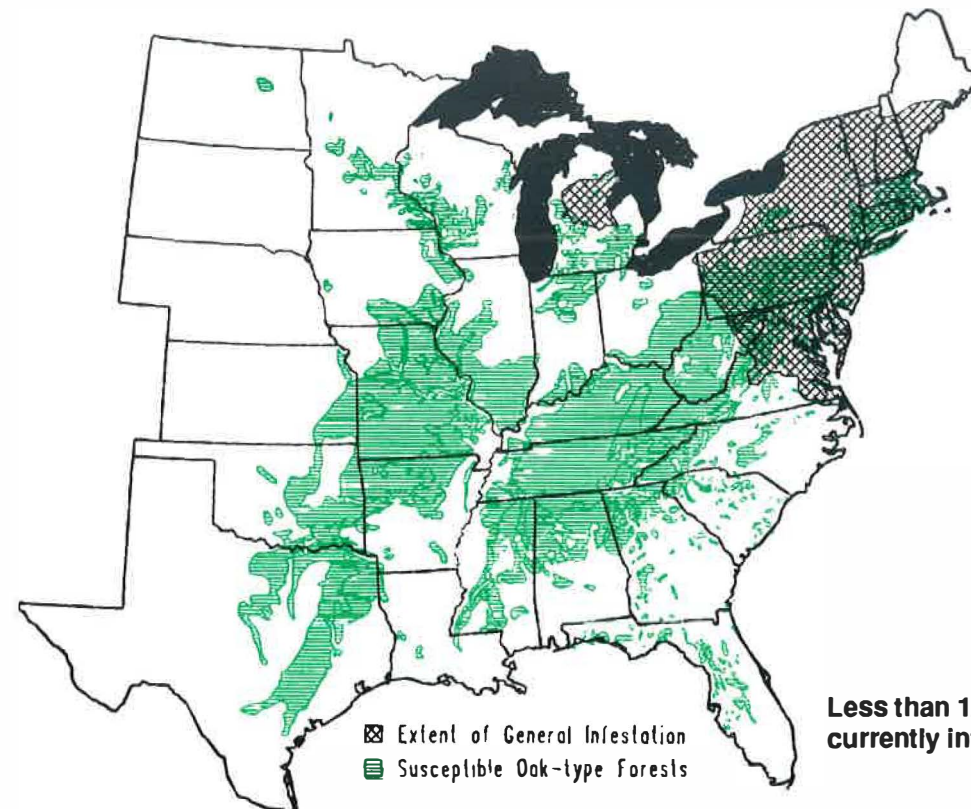
THE GEORGE WASHINGTON AND JEFFERSON NATIONAL FORESTS

This month's activities centered around identifying, establishing, and collecting pretreatment data at our proposed experimental study sites on the National Forests. These include:

- (1) A study to determine whether the application of high dosages of selected Bt products are effective against third and fourth instar gypsy moth caterpillars;
- (2) A study to determine the impact of gypsy moth defoliation on the water quality of acid-sensitive native trout streams;
- (3) A study to determine whether the gypsy moth specific pathogen, *Entomophaga*

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Susceptible oak-type forests of the East and the infested area of the Northeast, 1990



Less than 1/4 of oak type forests are currently infested

January 1991



APPALACHIAN GYPSY MOTH
INTEGRATED PEST MANAGEMENT

DEMONSTRATION PROJECT NEWS



TERRY FREY - EDITOR

VOLUME 4, ISSUE 3

MARCH 1991

MATING DISRUPTION, GILES COUNTY, VIRGINIA - FINAL RESULTS

During July 1989, a cooperative eradication project was conducted on a portion of an isolated infestation in Giles County, Virginia (See DPN articles in August and December 1989 for details. Recent DPN subscribers may obtain back issues from AIPM headquarters in Morgantown, our address is on Page 3). The project involved the aerial application of synthetic disparlure to disrupt mating of gypsy moths.

ple problems were encountered during the application, most associated with the specialized equipment required to apply Hercon's flaked product, Disrupt II. The specialized equipment consists of 2 pods mounted on the wings of an aircraft, 1 pod mounted per wing (Figure 1). At the selected dose rate of 30.4 grams Active Ingredient/acre, each load covered at most 125 acres. The flakes clung together or

AIPM PROGRAM MANAGER'S COLUMN

Methods improvement and pilot projects are a hallmark of the AIPM effort. This part of the project is described as our "new science objective". We have made substantial strides in testing and evaluating techniques and technology for use in gypsy moth management. One of the most promising is the aerial application of pheromone flakes against low-level populations to confuse male moths and make it difficult for them to locate and mate with the females.

The concept here is not new. Scientists have been working on the so-called "male confusant technique" since it became possible to artificially produce large quantities of the gypsy moth pheromone. Methods of presentation and delivery have been fine tuned through AIPM. This month's article deals with the advances in this technology.

The male confusant technique is an example of the type of knowledge gains that AIPM has made possible. AIPM has afforded managers the chance to improve old ways of doing business and develop and refine new ones. We will continue to take advantage of and emphasize technology development during the remainder of the Project.

ALLAN BULLARD

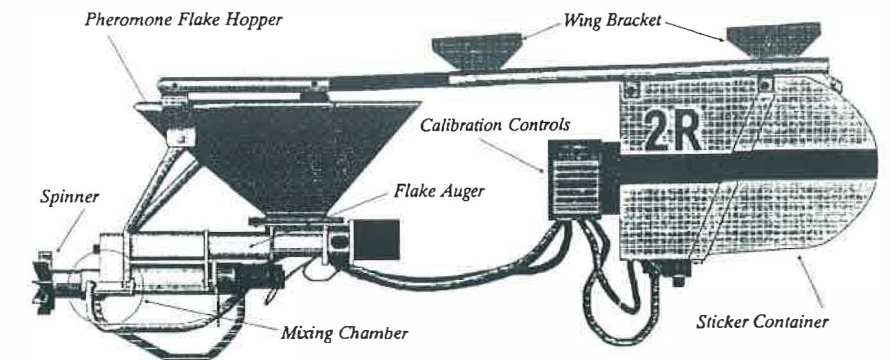


Figure 1. Hercon flake applicator, used to dispense Disrupt II.

The population density in the project area prior to treatment was measured in terms of moths/trap rather than egg masses/acre, certainly sparse enough for mating disruption to be effective.

Application began on July 18 and was completed on July 21, 1989. The choice of spray date was based on historic trapping data from the area, which documented earliest possible moth flight in the last week of July. Actual moth flight began August 2 (14 days post spray) and was over by August 21 (33 days post spray). Multi-

"bridged" in the hoppers resulting in an uneven flow rate. Adding baby powder to the hoppers helped with this problem but did not alleviate it entirely. The spinners frequently became clogged with a mixture of flakes and sticker and had to be cleaned every other load. Because of these problems, application of the flakes to the 2,550 acres took 4 days.

Although this was carried out within the context of an operational eradication project, efforts were made to document: 1) pre- and post-treatment population levels in both the disruption

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Mating Disruption, Giles County, Virginia - Final Results . . .
Continued from page 1

block and a control area, 2) the level of mating disruption achieved, 3) the release rate of the pheromone from the flakes, and 4) the deposition of the flakes within a forest canopy and the performance of the sticker over time.

Pre- and Post-treatment
Population Levels

Male moth trapping results, displayed in the table below, indicate that two years after treatment the area treated with pheromone is still free of moths, while the untreated area con-

produce eggs that will embryonate, but because of the genetic damage caused by irradiation, will not hatch. Although 1/3 of the females deployed produced eggs, none of the eggs embryonated after a 40 day holding period. Thus none of the sentinel females were mated in either block. The existing population may have been too sparse to effectively permit mating at the level sampled. Also, the lab reared, sterile females may not have been competitive in attracting mates. In the absence of mating occurrence, success of the project could only be determined by male moth catches.

| | Year | Grid spacing | Total # Traps | # Pos. Traps | Total # Moths |
|--------------|------|--------------|---------------|--------------|---------------|
| Trtmt. Area | 1988 | 500 m | 35 | 30 | 97 |
| | 1989 | 250 m | 170 | 0 | 0 |
| | 1990 | 250 m | 170 | 0 | 0 |
| Control Area | 1988 | 500 m | 15 | 9 | 28 |
| | 1989 | 250 m | 50 | 13 | 21 |
| | 1990 | 500 m | 13 | 8 | 52 |

tinues to support a low level population of gypsy moths. In terms of evaluating eradication projects, two years of negative trap results generally indicates a successful eradication and as such this application of disparlure is considered a success.

Level of Mating Disruption
Achieved

Mating disruption is documented by deploying female moths (called sentinel females) for a period of time coinciding with moth flight, retrieving them and allowing them to lay an egg mass. Embryonated eggs are proof that the female producing those eggs was mated. When mated with a normal male, these sterile females can

Release Rate of the
Pheromone

Samples of flakes were collected weekly and analyzed for residual racemic disparlure content. Results of the analysis indicate that by day 10 of field exposure, 65% of the Active Ingredients had already been released. Over the entire 8 week exposure period, the flakes released 87% of their total racemic disparlure content.

Deposition of the Flakes

At application, deposition of the flakes throughout the canopy and understory was good with 90% of the flakes applied distributed evenly throughout all levels of the canopy and understory. Ten percent of the flakes

penetrated all levels of foliage and were deposited on the forest floor at application. Sticker performance was evaluated over a 6 week period post spray. Only an additional 6% of the flakes fell to the forest floor during this time, leaving 84% of the total flakes applied still in the canopy where they adhered on impact.

In conclusion, the results obtained in this case are encouraging. Realizing that while mating disruption may have future applications in eradication efforts, eradication projects are not generally suitable as study sites. Main-

taining an untreated area containing a reproducing population of gypsy moths, much less replicated control blocks, is counter productive to the objective of eradication. Therefore current efforts are being directed at areas of low populations along the leading edge in Rockbridge County, Virginia.

These Rockbridge Co. plots are being used to evaluate formulations and rates in a replicated block study design. The goal is to find and test a product that can be applied with conventional spray equipment and test it against the reference, Hercon's Disrupt II. Additionally, areas in 2 counties within AIPM have been selected to receive operational applications of Disrupt II.

DONNA LEONARD

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We also conducted several egg mass searches in areas of low level populations.

With emphasis shifting to Zone IV intervention, male moth trapping is extremely important. The preparations that we are making will improve our efficiency this trapping season.

JUDY WEESE

The DEMONSTRATION PROJECT NEWS is published Monthly by the Appalachian Integrated Pest Management (AIPM) Project. The first large scale project to employ integrated pest management against the gypsy moth, AIPM's mandate is to SLOW THE SPREAD and MINIMIZE THE ADVERSE IMPACT of the gypsy moth in a 38 county, 12.8 million acre area of Virginia and West Virginia.

Contributions, questions or comments may be sent to:

Demonstration Project News
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Morgantown, West Virginia 26505
FAX: (304) 599-7041

COOPERATING ORGANIZATIONS

USDA Forest Service
Northeastern Area State & Private Forestry (NA)
Region 8 Forest Pest Management (R8-FPM)
Northeastern Forest Experiment Station
Monongahela National Forest (MNF)
George Washington National Forest (GWNF)
Jefferson National Forest (JNF)
Shenandoah National Park (SNP)
Blue Ridge Parkway (BRP)
Appalachian Trail (AT)
WV Dept. of Agriculture (WVDA)
VA. Dept. of Agriculture and Consumer Services (VDACS)
WVU Cooperative Extension Service
VPI & SU Cooperative Extension Service
USDA Animal & Plant Health Inspection Service (APHIS)
Westvaco Corporation
Glatfelter Pulp Wood Company
Environmental Action Foundation
VA Dept. of Forestry
WV Forestry Division
National Gypsy Moth Management Board

VDACS

The Virginia Department of Agriculture and Consumer Services will be cooperating with twelve counties within the AIPM Project area during the 1991 intervention season. Proposed treatments include 2,915 acres of pheromone flakes, 35,900 acres of Bt, 23,566 acres of Dimilin 25W, 2,136 acres Dimilin 4L, and an undetermined number of acres (less than 2,000) of Gypchek.

The contract bids for the treatment of Bt and Dimilin, totaling 61,601 acres, were opened on February 25.

To fully involve the public in this program, VDACS and the counties are holding a series of public meetings. Every property owner in or adjacent to a treatment block received an invitation to a meeting in one of these counties:

| COUNTY | DATE |
|------------|----------------|
| Madison | Feb 19 |
| Rockbridge | Feb 28 & Mar 5 |
| Nelson | Mar 5 |
| Greene | Mar 6 |
| Botetourt | Mar 6 |
| Rockingham | Mar 7 |
| Augusta | Mar 8 |
| Page | Mar 12 |
| Albemarle | Mar 14 |
| Roanoke | Mar 14 |
| Bedford | Mar 14 |
| Shenandoah | Mar 15 |

At these meetings, property owners can learn more about how the proposals were developed and what to expect when operations begin. If they choose, their property will be excluded from the program.

For more information contact your local gypsy moth manager or the VDACS-AIPM office at 703-432-1186.

TOM CARY

Monongahela National
Forest . . .
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sues that would be used to evaluate each of the alternatives.

Work on the environmental analysis continues. The initial proposal calls for the use of Dimilin on 443 acres, Bt on 10,950 acres, and Gypchek on 160 acres, for a total of 11,553 acres. Last year, MNF used Dimilin on 615 acres, Bt on 4421 acres, and Gypchek on 150 acres, for a total of 5,186 acres. There are no proposals for low-level tactics this year.

About 80 percent of the area treated with Bt last year has been proposed for retreatment this year. Weather problems last year delayed the second of the two applications about 10 days longer than recommended. This year we are proposing a single treatment with a stronger dose.

DAVE FAIKE

The George Washington and
Jefferson National Forests . . .
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maimalga, can be established in gypsy moth populations by introducing soil infested with the spores of this fungus;

- (4) A study to examine aerial and two ground methods for the release of sterile gypsy moth eggs;
- (5) A study designed to examine the success of establishment of isolated, colonizing populations of gypsy moth.

JEFF WITKOSKY